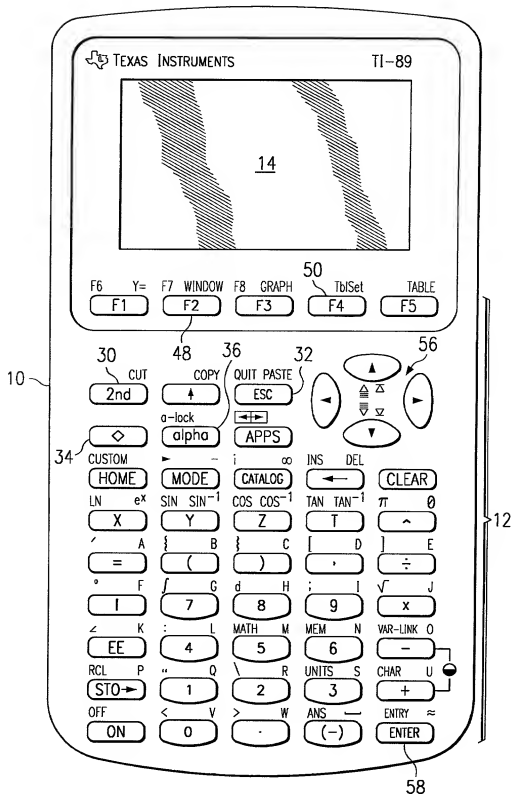


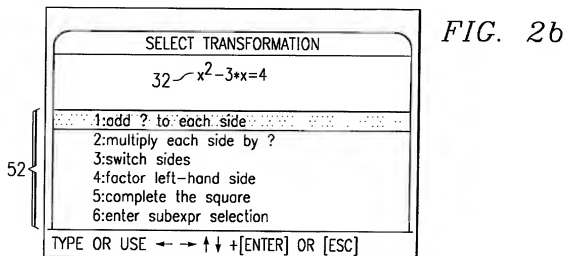
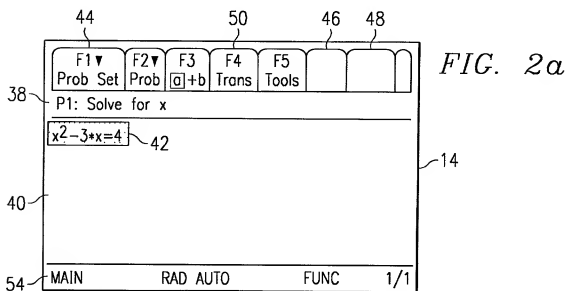
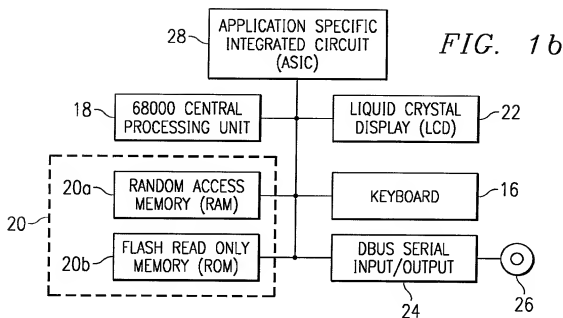
#3

FIG. 1a



10062598.041202

2/33



3/33

FIG. 2c

F1▼ Prob Set	F2▼ Prob	F3 [a]+b	F4 Trans	F5 Tools			
P1: Solve for x							
add ? to each side							
$x^2 - 3x = 4$							
? = <input type="text" value="-4"/>							
Enter=OK				ESC=CANCEL			
MAIN		RAD AUTO		FUNC		1/1	

FIG. 2d

F1▼ Prob Set	F2▼ Prob	F3 [a]+b	F4 Trans	F5 Tools			
P1: Solve for x							
$x^2 - 3x = 4$							
► add -4 to each side							
Press <ENTER>							
MAIN		RAD AUTO		FUNC		PAUSE	

FIG. 2e

F1▼ Prob Set	F2▼ Prob	F3 [a]+b	F4 Trans	F5 Tools			
P1: Solve for x							
$x^2 - 3x = 4$							
► add -4 to each side							
$x^2 - 3x + -4 = 4 + -4$							
MAIN		RAD AUTO		FUNC		1/1	

4/33

FIG. 2f

F1▼ Prob Set	F2▼ Prob	F3 [a] + b	F4 Trans	F5 Tools			
P1: Solve for x							
$x^2 - 3x = 4$							
► add -4 to each side							
$x^2 - 3x + -4 = 4 + -4$							
► simplify							
Press <ENTER>							
MAIN		RAD AUTO		FUNC		PAUSE	

FIG. 2g

F1▼ Prob Set	F2▼ Prob	F3 [a] + b	F4 Trans	F5 Tools			
P1: Solve for x							
$x^2 - 3x = 4$							
► add -4 to each side							
$x^2 - 3x + -4 = 4 + -4$							
► simplify							
$x^2 - 3x - 4 = 0$							
MAIN		RAD AUTO		FUNC		1/1	

FIG. 2h

SELECT TRANSFORMATION			
$x^2 - 3x - 4 = 0$			
1: odd ? to each side			
2: multiply each side by ?			
3: switch sides			
4: factor left-hand side			
5: quadratic formula			
6: enter subexpr selection			
MAIN		RAD AUTO	
FUNC		1/1	

5/33

FIG. 2i

F1▼ Prob Set	F2▼ Prob	F3 [a]+b	F4 Trans	F5 Tools			
P1: Solve for x							
$x^2 - 3x + -4 = 4 + -4$							
▶ simplify							
$x^2 - 3x - 4 = 0$							
▶ factor left-hand side							
$(x-4)*(x+1)=0$							
MAIN		RAD AUTO		FUNC		1/1	

FIG. 2j

SELECT TRANSFORMATION	
$(x-4)*(x+1)=0$	
1: add ? to each side	
2: multiply each side by ?	
3: switch sides	
4: $A*B=0 \rightarrow A=0$ or $B=0$	
5: distribute multiplication	
6: $(A \pm B)*C \rightarrow A*C \pm B*C$	
7: $A*(B \pm C) \rightarrow A*B \pm A*C$	
MAIN	RAD AUTO FUNC 1/1

FIG. 2k

F1▼ Prob Set	F2▼ Prob	F3 [a]+b	F4 Trans	F5 Tools			
P1: Solve for x							
$x^2 - 3x - 4 = 0$							
▶ factor left-hand side							
$(x-4)*(x+1)=0$							
▶ $A*B=0 \rightarrow A=0$ or $B=0$							
$x-4=0$ or $x+1=0$							
MAIN		RAD AUTO		FUNC		1/1	

6/33

FIG. 2l

SELECT TRANSFORMATION	
$x-4=0$ or $x+1=0$	
1:solve linear equation	
2:enter subexpr selection	
TYPE OR USE ← → ↑ ↓ +[ENTER] OR [ESC]	

FIG. 2m

F1▼ Prob Set	F2▼ Prob	F3 [a] + b	F4 Trans	F5 Tools			
P1: Solve for x							
$(x-4)*(x+1)=0$							
▶ $A*B=0 \rightarrow A=0$ or $B=0$							
$x-4=0$ or $x+1=0$							
▶ solve linear equation							
$x=4$, or $x=-1$							
MAIN		RAD AUTO		FUNC		1/1	

FIG. 2n

F1▼ Prob Set	F2▼ Prob	F3 [a] + b	F4 Trans	F5 Tools			
P1: Solve for x							
$x^2-3x-4=0$							
▶ quadratic formula							
$x = \frac{-3 \pm \sqrt{(-3)^2 - 4*1*-4}}{2*1}$ or ▶							
MAIN		RAD AUTO		FUNC		1/1	

7/33

F1▼ Prob Set	F2▼ Prob	F3 [a]/b	F4 Trans	F5 Tools			
P1: Solve for x							
► quadratic formula							
$x = \frac{- -3 + \sqrt{(-3)^2 - 4 * 1 * -4}}{2 * 1} \text{ or } \blacktriangleright$							
► simplify							
[x]=4. or x=-1							
MAIN		RAD AUTO		FUNC		1/1	

FIG. 20

FIG. 3a

44 F1▼ Prob Set	50 F2▼ Prob	F3 [a]/b	46 F4▼ Trans	48 F5 Tools			
38 P3: Solve for x							
$x^2 - 3x = 4$							
40							
MAIN		DEG AUTO		FUNC		3/4	

54

FIG. 3b

46 F1▼ Prob Set	48 F2▼ Prob	F3 [a]/b	F4▼ Trans	F5 Tools			
P3: Solve for x							
$x^2 - 3x = 4$							
52 → 1: add ? to each side 2: subtract ? from each side 3: multiply each side by ? 4: divide each side by ? 5: switch sides 62 → 6: complete the square 7: factor LHS 8: factor RHS							
MAIN		DEG AUTO		FUNC		3/4	

54

10062598-041202

8/33

FIG. 3c

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
P3: Solve for x							
$x^2 - 3x = 4$ ► complete the square ~ 64							
$x^2 - 3x + \left(\frac{3}{2}\right)^2 = 4 + \left(\frac{3}{2}\right)^2$ ~ 66							
MAIN		DEG AUTO		FUNC 3/4			

FIG. 3d

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
P3: Solve for x							
$x^2 - 3x = 4$ ► complete the square							
$x^2 - 3x + \left(\frac{3}{2}\right)^2 = 4 + \left(\frac{3}{2}\right)^2$ ~ 68							
USE ←, →, ↑, ↓ Shift ←, Shift →, ESC, F3, F4, F7							

FIG. 3e

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
P3: Solve for x				1: $A^2 \pm 2AB + B^2 \rightarrow (A \pm B)^2$			
$x^2 - 3x = 4$ ► complete the square				2: factor			
$x^2 - 3x + \left(\frac{3}{2}\right)^2 = 4 + \left(\frac{3}{2}\right)^2$				3: simplify			
				4: arithmetic			
				5: $(A/B)^C \rightarrow A^C B^C$			
TYPE OR USE ←, →, ↑, ↓ + [ENTER] = OK AND [ESC] = CANCEL							

10062598-044202

9/33

FIG. 3f

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
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P3: Solve for x

► complete the square

$$x^2 - 3x + \left(\frac{3}{2}\right)^2 = 4 + \left(\frac{3}{2}\right)^2$$

► $A^2 \pm 2AB + B^2 \rightarrow (A \pm B)^2$

$$\left(x - \frac{3}{2}\right)^2 = 4 + \left(\frac{3}{2}\right)^2$$

MAIN DEG AUTO FUNC 3/4

FIG. 3g

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
-----------------	-------------	-----------	--------------	-------------	--	--	--

P3: Solve for x

► complete the square

$$x^2 - 3x + \left(\frac{3}{2}\right)^2 = 4 + \left(\frac{3}{2}\right)^2$$

► $A^2 \pm 2AB + B^2 \rightarrow (A \pm B)^2$

$$\left(x - \frac{3}{2}\right)^2 = 4 + \left(\frac{3}{2}\right)^2$$

MAIN DEG AUTO FUNC 3/4

FIG. 3h

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
-----------------	-------------	-----------	--------------	-------------	--	--	--

P3: Solve for x

► complete the square

$$x^2 - 3x + \left(\frac{3}{2}\right)^2 = 4 + \left(\frac{3}{2}\right)^2$$

► $A^2 \pm 2AB + B^2 \rightarrow (A \pm B)^2$

$$\left(x - \frac{3}{2}\right)^2 = 4 + \left(\frac{3}{2}\right)^2$$

MAIN DEG AUTO FUNC 3/4

10062593-041202

10/33

FIG. 3i

F1▼ Prob Set	F2▼ Prob	F3 [a]/b	F4▼ Trans	F5 Tools			
P3: Solve for x							
▶ $A^2 \pm 2AB + B^2 \rightarrow (A \pm B)^2$							
$(x - \frac{3}{2})^2 = 4 + (\frac{3}{2})^2$							
▶ arithmetic							
$(x - \frac{3}{2})^2 = \frac{25}{4}$							
MAIN		DEG AUTO			FUNC 3/4		

FIG. 3j

F1▼ Prob Set	F2▼ Prob	F3 [a]/b	F4▼ Trans	F5 Tools			
P3: Solve for x				1: add ? to each side			
▶ $A^2 \pm 2AB + B^2 \rightarrow$				2: subtract ? from each side			
$(x - \frac{3}{2})^2 = 4 + (\frac{3}{2})^2$				3: multiply each side by ?			
▶ arithmetic				4: divide each side by ?			
$(x - \frac{3}{2})^2 = \frac{25}{4}$				5: switch sides			
				6: $A^2 = B \rightarrow A = \sqrt{B}$ or $A = -\sqrt{B}$			
				7: expand			
				8: $(A \pm B)^2 \rightarrow A^2 \pm 2AB + B^2$			
MAIN		DEG AUTO			FUNC 3/4		

FIG. 3k

F1▼ Prob Set	F2▼ Prob	F3 [a]/b	F4▼ Trans	F5 Tools			
P3: Solve for x							
▶ arithmetic							
$(x - \frac{3}{2})^2 = \frac{25}{4}$							
▶ $A^2 = B \rightarrow A = \sqrt{B}$ or $A = -\sqrt{B}$							
$x - \frac{3}{2} = \sqrt{\frac{25}{4}}$ or $x - \frac{3}{2} = -\sqrt{\frac{25}{4}}$							
MAIN		DEG AUTO			FUNC 3/4		

10062598.041202

11/33

FIG. 3l

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
P3: Solve for x		1:solve linear equation					
► arithmetic		2:√(A) → A^(1/2)					
$(x - \frac{3}{2})^2 = \frac{25}{4}$		3:distribute √					
		4:√(A/B) → √(A)/√(B)					
► A^2=B → A=√B		5:√(A/B) → √(A)/√(B)					
		6:evaluate √					
$x - \frac{3}{2} = \sqrt{\frac{25}{4}}$ or $x - \frac{3}{2} = -\sqrt{\frac{25}{4}}$							
MAIN		DEG AUTO		FUNC 3/4			

FIG. 3m

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
P3: Solve for x							
► A^2=B → A=√B or A=-√B							
$x - \frac{3}{2} = \sqrt{\frac{25}{4}}$ or $x - \frac{3}{2} = -\sqrt{\frac{25}{4}}$							
► evaluate √							
$x - \frac{3}{2} = \frac{5}{2}$ or $x - \frac{3}{2} = -\frac{5}{2}$							
MAIN		DEG AUTO		FUNC 3/4			

FIG. 3n

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
P3: Solve for x		1:solve linear equation					
► A^2=B → A=√B or A=-√B							
$x - \frac{3}{2} = \sqrt{\frac{25}{4}}$ or $x - \frac{3}{2} = -\sqrt{\frac{25}{4}}$							
► evaluate √							
$x - \frac{3}{2} = \frac{5}{2}$ or $x - \frac{3}{2} = -\frac{5}{2}$							
TYPE: OR USE ← → ↑ ↓ + [ENTER] = OK AND [ESC] = CANCEL							

10062598-041202

12/33

FIG. 30

F1▼ Prob Set	F2▼ Prob	F3 a/b	F4▼ Trans	F5 Tools			
-----------------	-------------	-----------	--------------	-------------	--	--	--

P3: Solve for x

$$x - \frac{3}{2} = \sqrt{\frac{25}{4}} \text{ or } x - \frac{3}{2} = -\sqrt{\frac{25}{4}}$$

► evaluate $\sqrt{}$

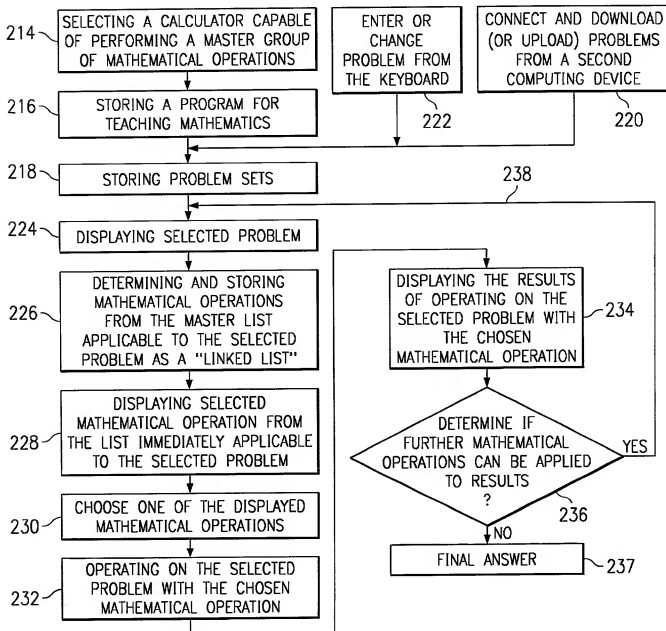
$$x - \frac{3}{2} = \frac{5}{2} \text{ or } x - \frac{3}{2} = -\frac{5}{2}$$

► solve linear equation

$x=4 \text{ or } x=-1$

MAIN	DEG AUTO	FUNC 3/4
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FIG. 9



10062598.041202

13/33

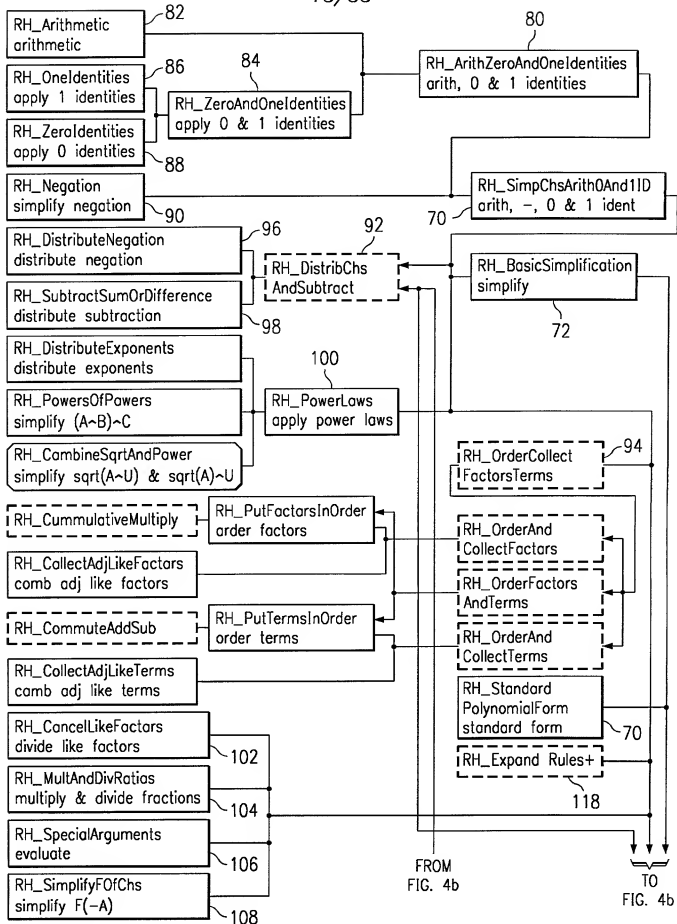


FIG. 4a

FROM
FIG. 4a

FIG. 4b

FIG. 4C

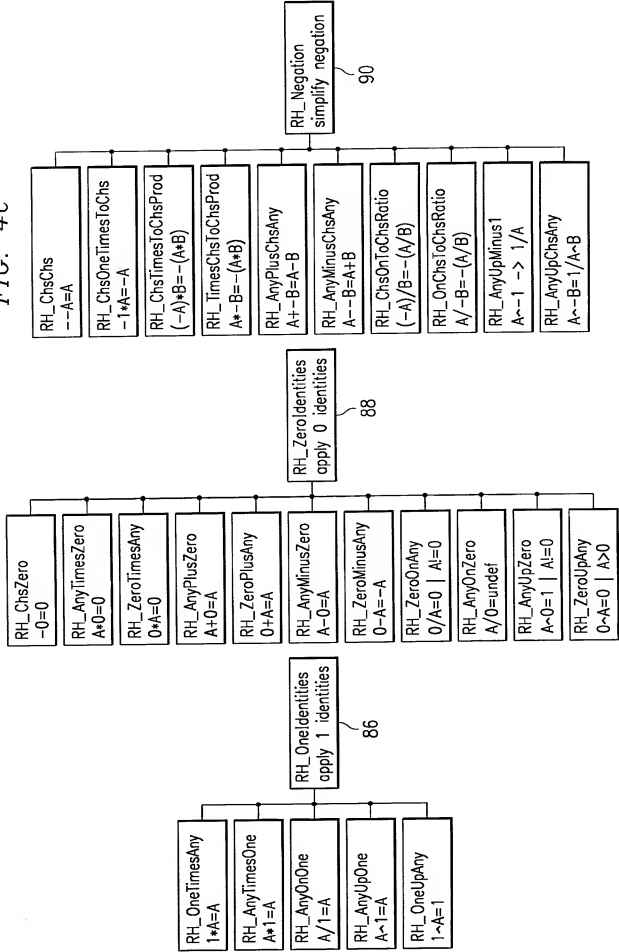


FIG. 4d

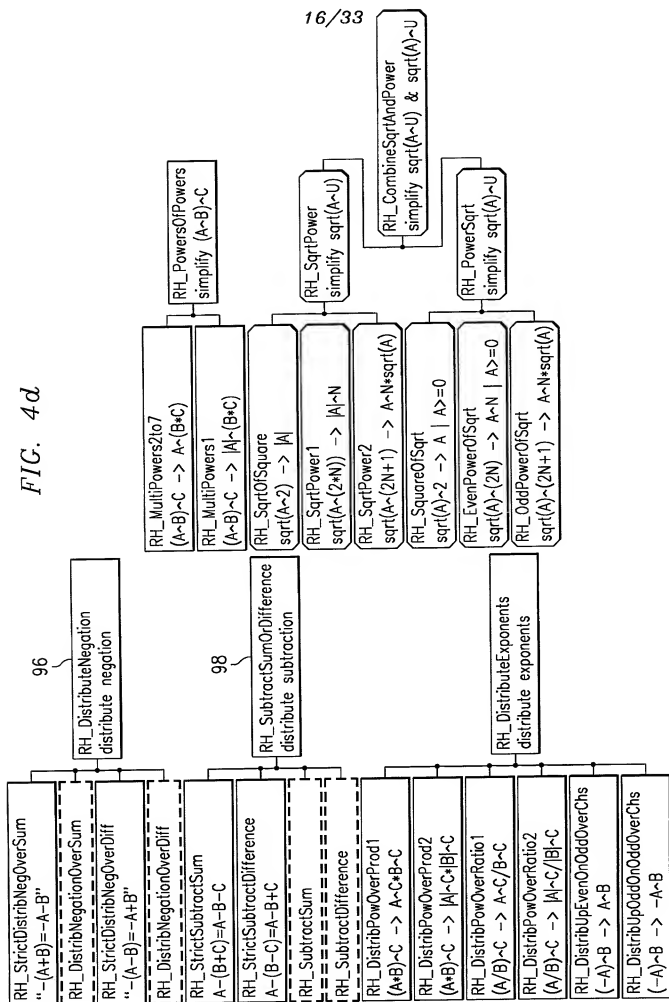


FIG. 4e

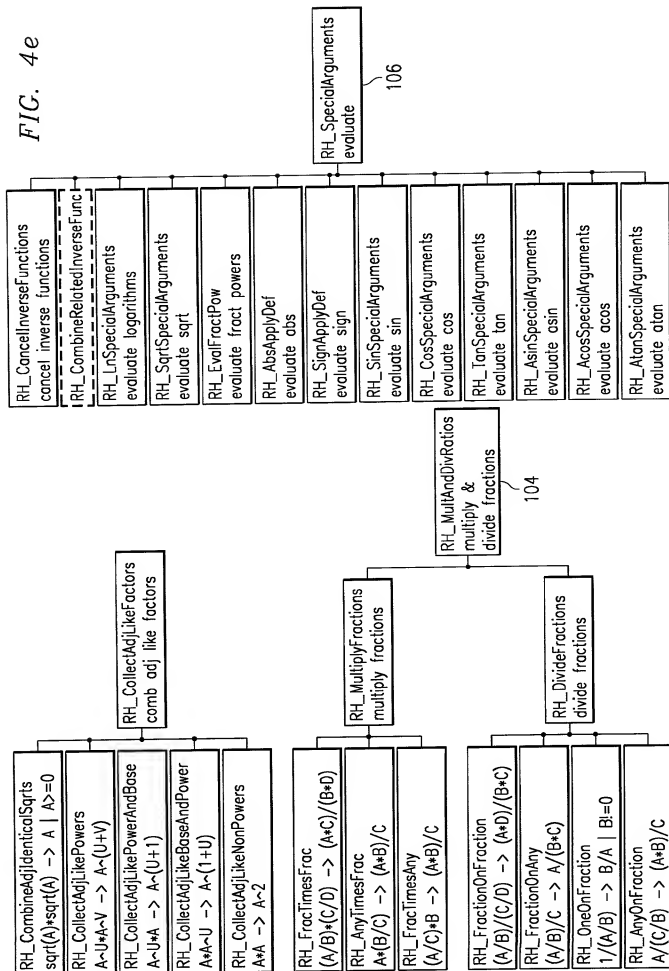
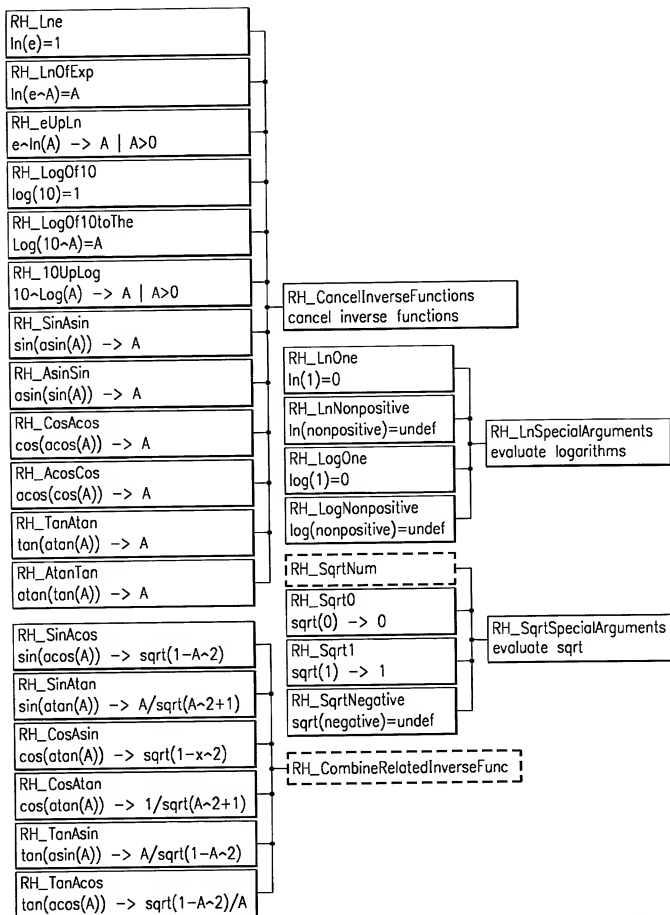


FIG. 4f



19/33

RH_AbsNonnegative $ A \mid A \geq 0 \rightarrow A$
RH_AbsNonpositive $ A \mid A \leq 0 \rightarrow -A$
RH_AbsSign $ \text{sign}(A) \rightarrow 1$

RH_AbsApplyDef
evaluate abs

FIG. 4g

RH_Sin0 $\sin(0) \rightarrow 0$
RH_SinPiOn6 $\sin(\pi/6) \rightarrow 1/2$
RH_SinPiOn4 $\sin(\pi/4) \rightarrow \sqrt{2}/2$
RH_SinPiOn3 $\sin(\pi/3) \rightarrow \sqrt{3}/2$
RH_SinPiOn2 $\sin(\pi/2) \rightarrow 1$
RH_SinPi $\sin(\pi) \rightarrow 0$
RH_SinNPi $\sin(N\pi) \rightarrow 0$
RH_SinNPlusHalfPi $\sin((N+1/2)\pi) \rightarrow (-1)^N$

RH_SinSpecialArguments
evaluate sin

RH_Cos0 $\cos(0) \rightarrow 1$
RH_CosPiOn6 $\cos(\pi/6) \rightarrow \sqrt{3}/2$
RH_CosPiOn4 $\cos(\pi/4) \rightarrow \sqrt{2}/2$
RH_CosPiOn3 $\cos(\pi/3) \rightarrow 1/2$
RH_CosPiOn2 $\cos(\pi/2) \rightarrow 0$
RH_CosPi $\cos(\pi) \rightarrow -1$
RH_CosNPi $\cos(N\pi) \rightarrow (-1)^N$
RH_CosNPlusHalfPi $\cos((N+1/2)\pi) \rightarrow 0$

RH_Tan0
 $\tan(0) \rightarrow 0$

RH_TanPiOn6
 $\tan(\pi/6) \rightarrow \sqrt{3}/3$

RH_TanPiOn4
 $\tan(\pi/4) \rightarrow 1$

RH_TanPiOn3
 $\tan(\pi/3) \rightarrow \sqrt{3}$

RH_TanPi
 $\tan(\pi) \rightarrow 0$

RH_TanNPi
 $\tan(N\pi) \rightarrow 0$

RH_TanNPlusHalfPi
 $\tan((N+1/2)\pi) \rightarrow \text{undef}$

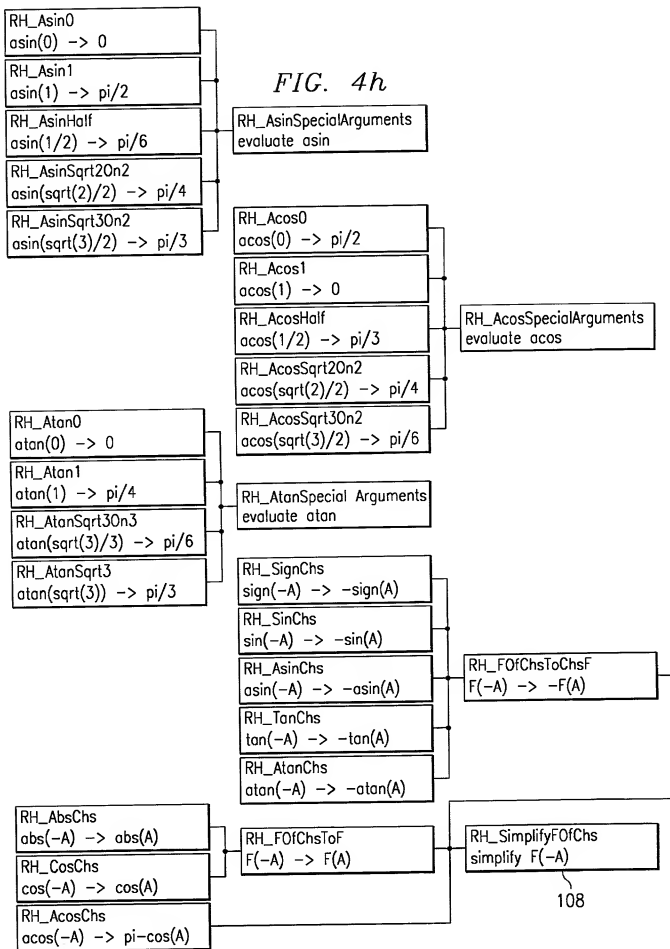
RH_CosSpecialArguments
evaluate cos

RH_TanSpecialArguments
evaluate tan

10062598.041202

20/33

FIG. 4h



21/33

FIG. 4i

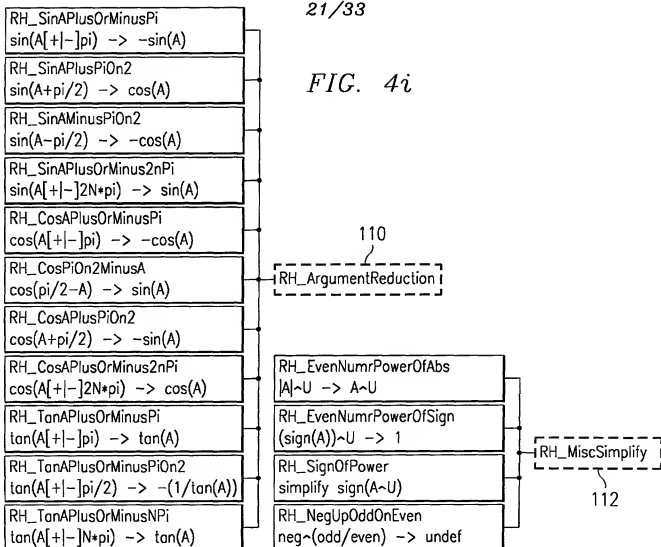
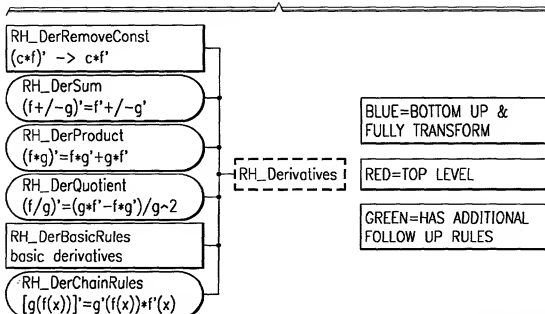


FIG. 4t



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22/33

FIG. 4j

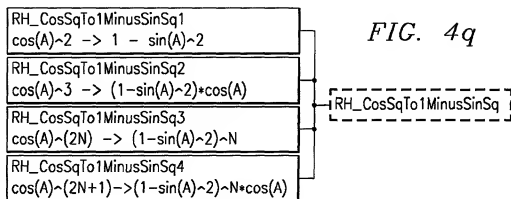
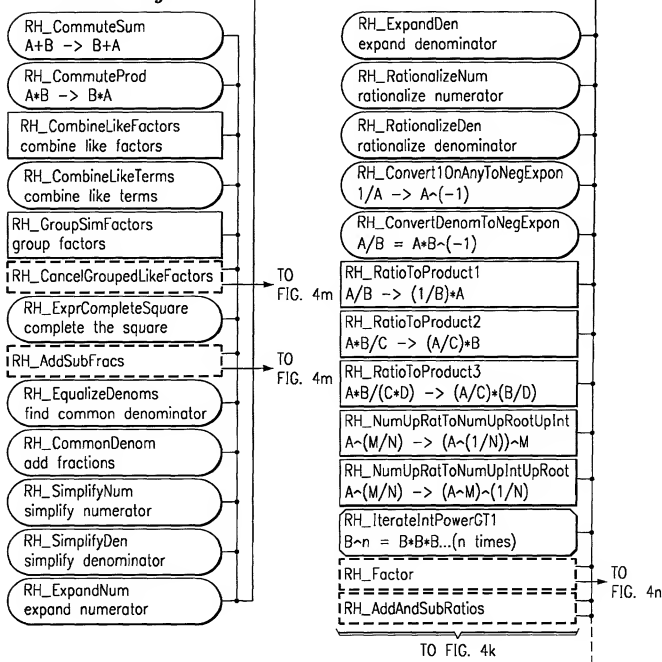
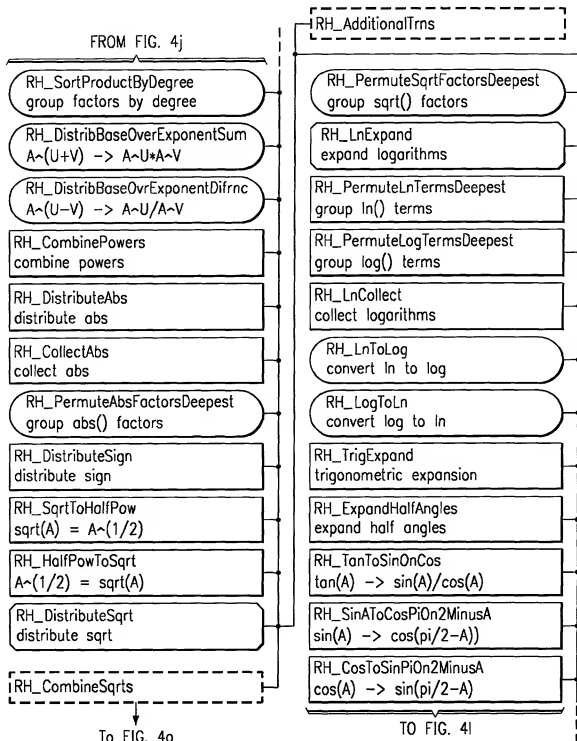


FIG. 4q

10062598.041202

FIG. 4k



10062598.041202

24/33

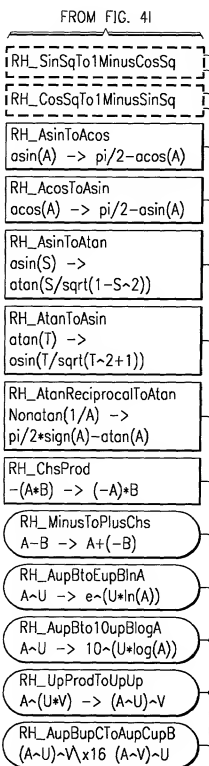


FIG. 4l

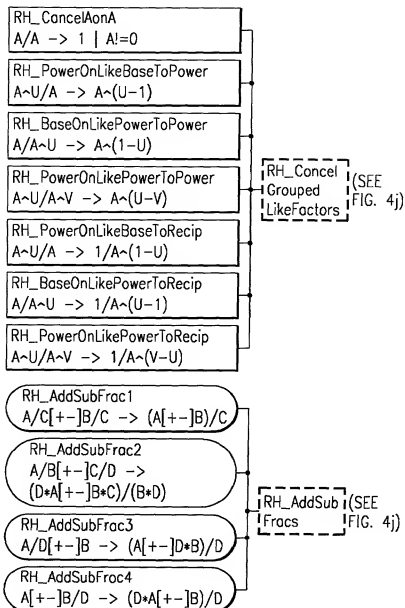
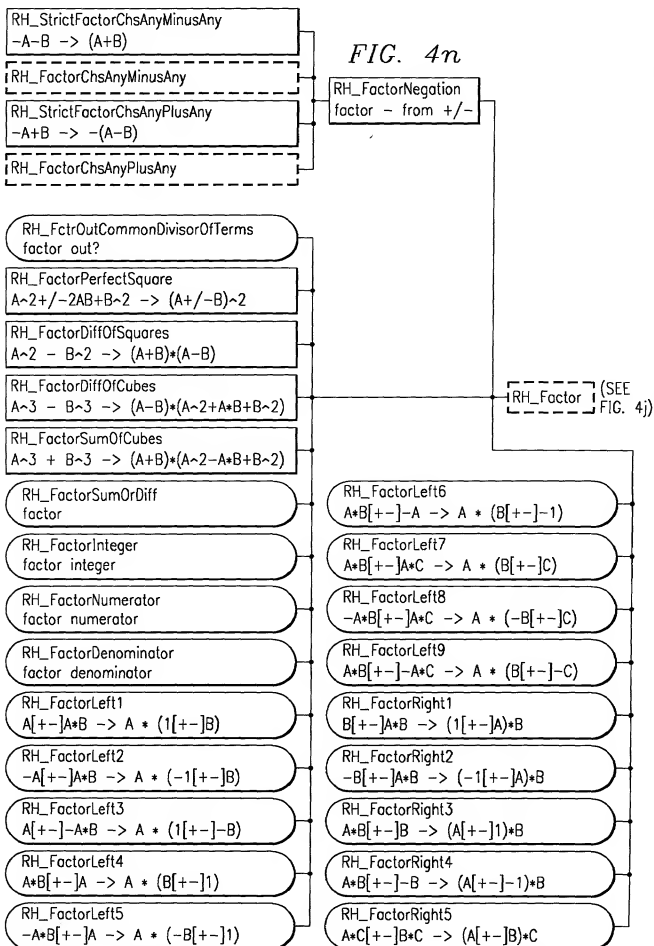


FIG. 4m

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25/33



10062598 041202

26/33

RH_CombineProductsOfPowers

$$A \sim C * B \sim C \rightarrow (A * B) \sim C$$

RH_CombineRatiosOfPowers

$$A \sim C / B \sim C \rightarrow (A / B) \sim C$$

RH_AbsProduct

$$|A * B| \rightarrow |A| * |B|$$

RH_AbsRatio

$$|A / B| \rightarrow |A| / |B|$$

RH_AbsOfUpEitherOnOdd

$$|A \sim B| \rightarrow |A| \sim B$$

RH_SignProduct

$$\text{sign}(A * B) \rightarrow \text{sign}(A) * \text{sign}(B)$$

RH_SignRatio

$$\text{sign}(A / B) \rightarrow \text{sign}(A) / \text{sign}(B)$$

RH_DistribSqrtOverProd

$$\text{sqrt}(A * B) \rightarrow \text{sqrt}(|A|) * \text{sqrt}(|B|)$$

RH_DistribSqrtOverRatio

$$\text{sqrt}(A / B) \rightarrow \text{sqrt}(|A|) / \text{sqrt}(|B|)$$

RH_CombineProdSqrts

$$\text{sqrt}(A) * \text{sqrt}(B) \rightarrow \text{sqrt}(A * B)$$

RH_CombineRatioSqrts

$$\text{sqrt}(A) / \text{sqrt}(B) \rightarrow \text{sqrt}(A / B)$$

RH_LogProduct

$$\ln(U * V) \rightarrow \ln(|U|) + \ln(|V|)$$

RH_LogRatioOneOnAny

$$\ln(1/A) \rightarrow -\ln(A)$$

RH_LogRatio

$$\ln(U/V) \rightarrow \ln(|U|) - \ln(|V|)$$

RH_LogPow

$$\ln(A \sim B) \rightarrow B * \ln(|A|)$$

RH_LogProduct

$$\log(U * V) \rightarrow \log(|U|) + \log(|V|)$$

RH_LogRatioOneOnAny

$$\log(1/A) \rightarrow -\log(A)$$

RH_LogRatio

$$\log(U/V) \rightarrow \log(|U|) - \log(|V|)$$

RH_LogPow

$$\log(A \sim B) \rightarrow B * \log(|A|)$$

RH_CombinePowers
combine powers

FIG. 4o

RH_DistributeAbs
distribute abs

RH_DistributeSign
distribute sign

RH_DistributeSqrt
distribute sqrt

RH_CombineSqrts (SEE FIG. 4k)

RH_LogExpand
expand logarithms

FIG. 4p

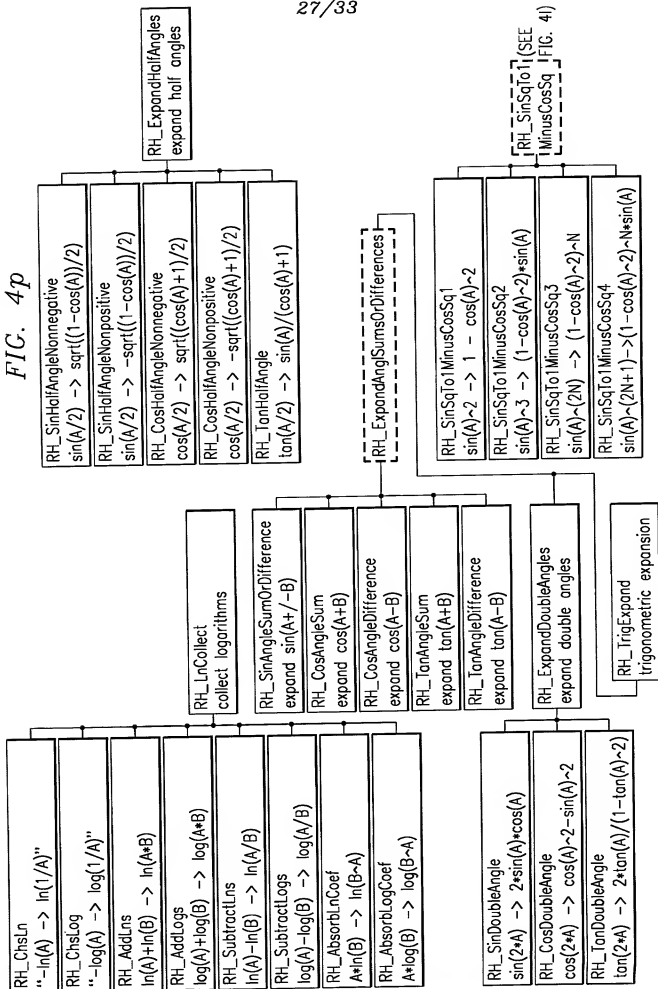
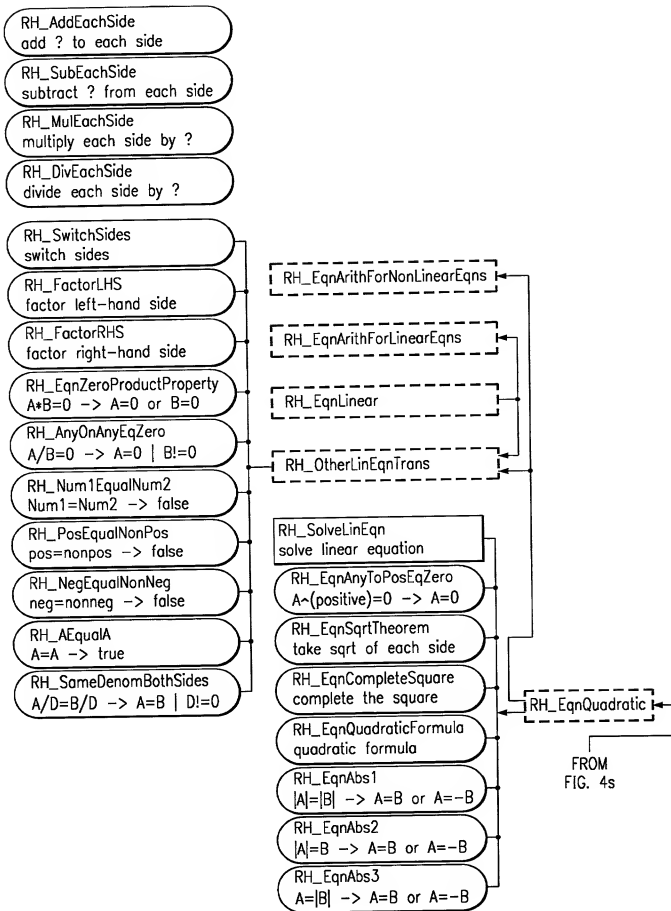


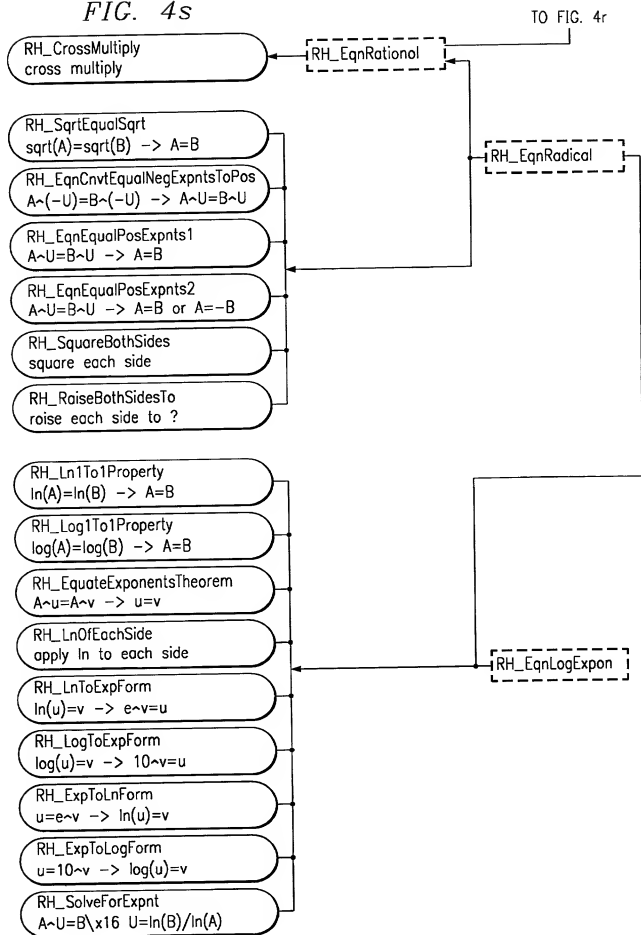
FIG. 4r



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29/33

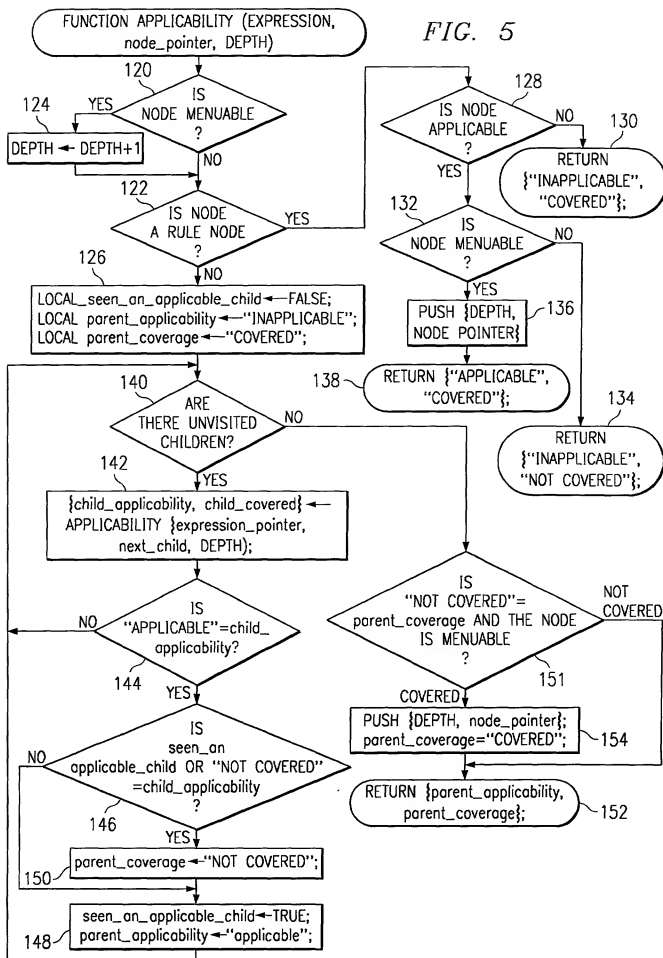
FIG. 4s



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30/33

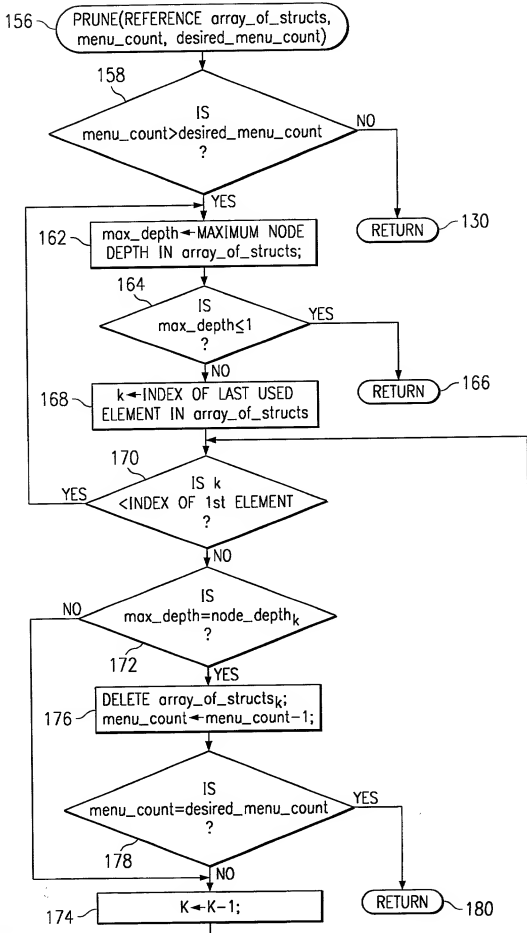
FIG. 5



202140-86529001

31/33

FIG. 6



10062598.041202

32/33

FIG. 7

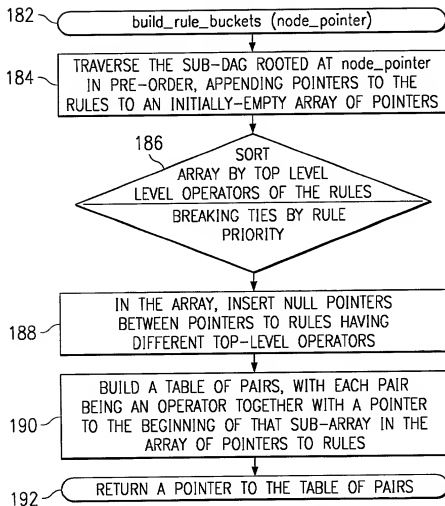
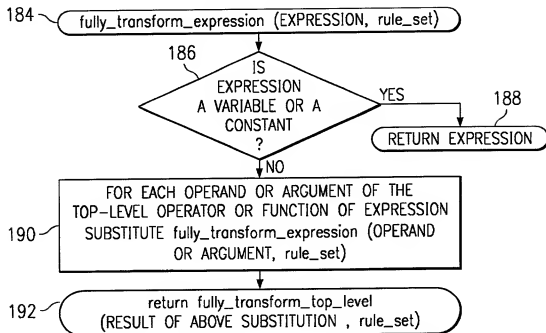


FIG. 8a



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FIG. 8b

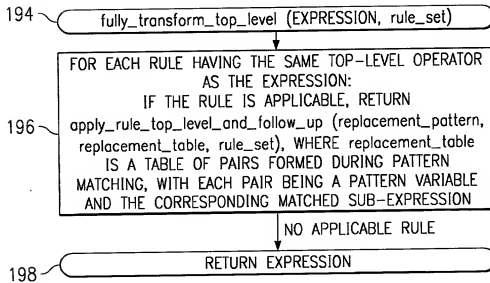
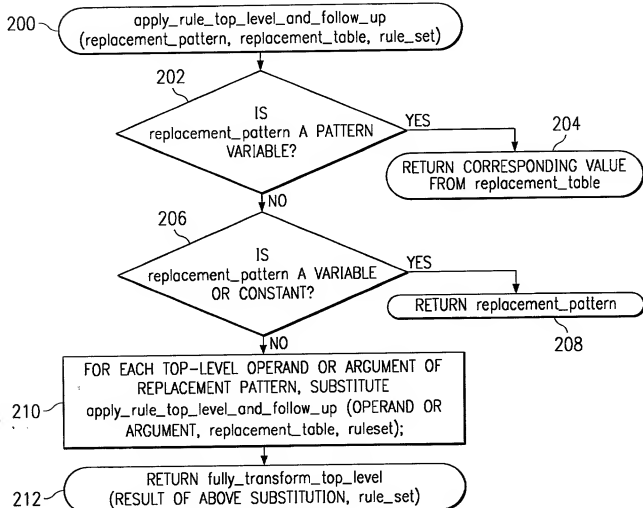


FIG. 8c



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